# Creation Matters

**Volume 26 Number 3**
**Summer 2021**

**A publication of the**
**Creation Research Society**


## CRS Conference in Review

This past July, the Creation Research Society held its annual science conference on the campus of Arizona Christian University (Glendale, AZ). Nearly 150 people were in attendance. As with previous years, everyone was invited to attend an informal reception on the Thursday night before the conference. This year, the setting for the reception was in the Society's new Van Andel Creation Research Center (on the campus of Arizona Christian University). This gave attendees the opportunity to tour the new facility, seeing the new laboratories as well as new office and storage spaces. In addi-

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## Musings on a Vestigial Table

**by Danny R. Faulkner**

The 2021 Board of Directors meeting of the Creation Research Society was at the Society's new headquarters on the campus of Arizona Christian University. A couple of people needed to join our meeting via Zoom, so we set a computer on a small table so that its camera could capture a video of the meeting for them. The table had scissor legs that allows for compact storage. I noticed that the legs on one side of the table were straight, but the legs on the other side were curved. My first impression was that the table had suffered damage resulting in the bending of those two legs. However, closer inspection yielded four reasons that the bending was not due to an accident.

First, the bending in the legs was in gradual arches. When tubular steel that the legs are made of is damaged, it doesn't bend so gracefully. Rather, there tends to be a single point of bending. Second, if the legs on one side were unintentionally bent, it would result in those legs being shorter than the legs on the other side, producing a tilt. However, the table was level. Third, tables must be carefully designed and constructed so that the ends of the legs are coplanar—doesn't it annoy you when a restaurant table rocks while you are dining? This table did not rock (though it was a really cool table!). Finally, for added stability, there was a brace connecting the bottoms

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# Math Matters

## What is on your mind?

### by Don DeYoung, PhD

Three decades ago, a creation-centered article discussed the mathematics of the brain (DeYoung and Bliss, 1990). This Math Matters entry summarizes and updates the ideas presented earlier.

*Discover Magazine* estimates the adult brain contains 86 billion neurons or nerve cells (Miller, 2020). During the first nine months of life, these basic working units reach an astounding formation rate of 250,000 per minute (Chudler, 2015). The neurons also acquire many trillions of interconnections or synapses, mediated by axon fibers.

When we think, neuron cells "fire" and electrochemical impulses move to neighboring neurons. These brain-wave signals are in the range of nanoamperes. The neuron circuitry can be visualized as light switches that are either active (firing) or off (resting). At any given moment, perhaps 10 percent of our brain cells are firing at a frequency of 100–200 hertz. This implies about one trillion network transmissions taking place every second.

Estimates vary greatly for adult brain capacity. In a binary sense, the brain potentially holds at least $10^{20}$ bits of data (Miller, 2020). This number is ten exabytes, far beyond giga, tera and petabytes ($10^9$, $10^{12}$ and $10^{15}$ bytes). These numbers are approximate, since the terms are based on powers of two: kilobyte= $2^{10}$, gigabyte = $2^{30}$, terabyte = $2^{40}$, etc. An exabyte ($10^{18}$ bytes) of data is a major portion of the total World Wide Web content. Neuroscientists correctly describe our brain as by far "the most complex object in the known universe" (Miller, p. 36). This phrase is a cliché, but it is also a fact. If the human brain capacity suggested here appears unrealistically high, consider that others give estimates even larger (Brown, 2011). The percentage of total brain capacity actually used by a person is not known.

| Storage Device | Information capacity |
|---|---|
| Typical book | 360 kilobytes (360,000 bytes) |
| DVD | 5 gigabytes ($5x10^9$ bytes) |
| Library of Congress | 250 terabytes ($250x10^{12}$ bytes) |
| Adult brain | 10 exabytes ($10^{19}$ bytes) |

**Approximate memory capacity of various systems in terms of bytes. (One byte = 8 bits = a single letter character)**

The referenced *Discover* article by Ken Miller is saturated with evolutionary thinking. For example, Miller suggests that language originated when our ancestors first descended from trees. Infants became separated from mom and called out for help. In truth, Adam and Eve's minds were programmed from the start with profound language and reasoning ability.


Chudler, E.H. 2015. Neuroscience for kids. Accessed June 17, 2021 from https://faculty.washington.edu/chudler/dev.html.

DeYoung, D. and D. Bliss. 1990. Thinking about the brain. *Acts and Facts* 19(2). Accessed June 17, 2021 from https://www.icr.org/article/thinking-about-brain/.

Miller, K. 2020. This is your brain on tech. *Discover* (May) pp. 34–41. See also a correction in *Discover*, September–October 2020, p. 7.

Brown, M. (2011, February 14). Studies estimate human information capacity at 256 exabytes. *Wired.* Retrieved June 21, 2021 from https://www.wired.co.uk/article/256-exabytes-of-human-information.


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# Creation Matters

ISSN 1094-6632
Volume 26, Number 3, Summer 2021



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## CRS Conference

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tion, the reception provided opportunity for attendees to visit with friends and other creationists. This fellowship has become an important component of the CRS Conferences, whether at the Thursday night reception or between sessions during the conference. Such fellowship encourages the forming of new friendships and collaborations, reestablishing old ones, and giving an atmosphere for the discussion of ideas that are important to creationists.

Each morning of the conference began with introductory remarks, followed by a plenary presentation. On Friday morning, this plenary was delivered by the new CRS Board President Dr. Robert Hill, who laid out a vision for the future of the Society. The Saturday morning plenary was offered by CRS Board member Dr. Mark Horstemeyer, who described engineering evidence for creation.

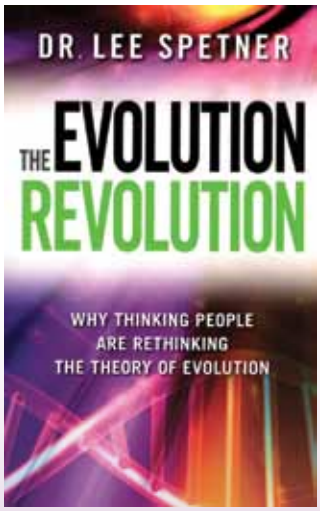
The remainder of each day was filled with concurrent session presentations. Each of these sessions was selected by the conference committee from a pool of submitted abstracts. The topics of these concurrent presentations varied, and included talks on geology, astronomy, and genetics.

Also featured at the conference was the Henry Morris Memorial Lecture, a lecture series in honor of the late Dr. Henry Morris, a key leader within the modern creation community. The lecture was delivered by Dr. Russ Humphreys, who discussed some of his ideas on flood geology and cataclysmic mechanisms of the flood.

Following the conference, several attendees also took a bus tour to Grand Canyon. Dr. Tim Clarey served as the guide, explaining various geologic features of the Canyon that indicate flood activity. For many, this was their first visit to the Canyon, making it a wonderful time of fellowship and learning.

Next year's conference will be held on the campus of Liberty University (Lynchburg, VA) July 29–30. Currently in the planning stages are pre-conference workshops that will be held the day before the conference (July 28). These workshops will be a new event for the conference, and open to any attendees that are interested. More information about these workshops will be given when plans and details have been finalized.

**Dr. Russ Humphreys delivers the Henry Morris Memorial Lecture.**


# The Evolution Revolution:

## Why Thinking People are Rethinking the Theory of Evolution

**Dr. Lee Spetner. 2020. Judaica Press, 168 pages (hard cover)**

Dr. Spetner's previous book, "Not By Chance," provided a devastating critique of the failure of Darwinian evolution to offer a valid genetic mechanism for the massive changes required by universal common descent. His latest book continues this theme, providing an updated genetic analysis of biological change. He cites growing evidence that many mutations are not random, but appear to be part of a far-reaching designed program. He also addresses problems with the evolutionists' arguments of the C-paradox and junk DNA. As Dr. Spetner concludes in the book's epilogue, Darwinists appear to be insecure in their beliefs, whistling in the dark "to reassure themselves as well as the public that their ideas are not foolish."

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## Vestigial Table

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of corresponding legs on opposite scissor pivots. If the legs were originally straight, these two braces would have had the same length, but one brace was shorter than the other, indicating that this feature was designed into the legs.

It was abundantly clear that the legs of this table were designed, but what was the purpose of this design? None of the scientists or engineers present could figure that out. If we knew what the original intended use of this table was, that might have given us a clue. I looked under the table for a sticker that might reveal what kind of table it was, but the two stickers underneath didn't provide that information. While seated, I pulled one side of the table up to me and then the other side to see if the bent legs offered any advantage. While sitting on the side with the bent legs, I perceived a slight advantage for a right-handed person while writing, but still the bent legs were in the way of my legs. If this table were to be used like a small desk, it could be much better achieved by other means, such as orienting the axis of the scissor joints parallel to the longer dimension of the tabletop, as tray tables are.

Here we had a table that at first glance appeared to be damaged in a way that should reduce or destroy its function. Yet, upon closer inspection, it was obviously designed with the bend in the legs, though no one was able to understand why. So, I called this a "vestigial table." Vestigial organs are organs that were once thought to be functionless, organs that had supposedly served a purpose for our evolutionary ancestors, but no longer for us. I put this in the past tense because supposedly vestigial organs are now known to have functions. The classic example is the appendix. It was once thought that the appendix had no useful purpose, but that opinion has changed. The appendix's purpose is still not fully understood, but it probably assists the immune system, and aids in maintaining good bacteria in our digestive systems. True, we usually can survive without supposedly vestigial organs (many people walking around lack appendices), but we can do better if we can keep them.

Another example is tonsils. My tonsils were removed when I was starting high school. I developed mild sinus problems shortly thereafter that I've lived with the rest of my life. I wish I still had my tonsils. A half century ago, the medical thinking was to remove appendices and tonsils at the first sign of a problem (and sometimes prophylactically), but today physicians remove these organs only as a last resort. This former medical practice was dictated by evolutionary thinking. Being influenced by evolutionary thinking, scientists and physicians were far too quick to dismiss organs that we can live without as being useless. Most of us could live without our left hands, but hardly anyone would recommend that we do so.

For years I've struggled with the concept of design in my discipline of astronomy. I think I can readily see design in living systems, but I'm not so sure I can recognize it in physical systems. I guess it comes down to how obvious the purpose of the design is. For instance, the fact that the sun is 400 times larger than the moon but is also 400 times farther away results in spectacular and rare total solar eclipses. For none of the nearly 200 other natural satellites in the solar system is this the case, and earth is the only planet in the solar system with intelligent beings to wonder at the beauty of total solar eclipses and contemplate their design implication.

Or consider the fact that the earth is near perihelion (closest point to the sun) during Northern Hemisphere winter and near aphelion (most distant point from the sun) during Northern Hemisphere summer. This tends to moderate the temperature difference between summer and winter in the Northern Hemisphere. The situation is reversed in the Southern Hemisphere, with summer occurring near perihelion and winter near aphelion. Not to worry—the Southern Hemisphere is about 90% water and 10% land, while the Northern Hemisphere is roughly split equally between land and water. Water's high specific heat moderates seasonal temperature differences in the Southern Hemisphere so that on average the difference between summer and winter temperatures in the two hemispheres is about the same. Of course, evolutionists would argue that this is just a coincidence, along with the remarkable coincidence of the sizes and distances of the sun and moon. However, there are many other examples of such coincidences. How many coincidences must exist before a person begins to realize that perhaps these aren't coincidences?

Like the vestigial table, the purpose of design is not always quite so obvious. As the moon orbits the earth, it keeps one face toward the earth. We call this synchronous rotation. It is common for the other natural satellites of the solar system to exhibit synchronous rotation as they orbit their planets. This is usually attributed to a tidal interaction that has locked orbiting satellites into synchronous rotation. This takes time, more time than recent creationists generally will accept, so what is our explanation? I would suggest that synchronous rotation may be necessitated by design. What is the purpose of this design? As with the vestigial table, I don't know, at least not yet. It is part of the job of creation scientists to recognize and hypothesize about design in the creation. Let us all be vigilant and receptive to the design around us, from simple tables, to living organisms, to astronomical bodies.

# The Pathway to Feathered Feet

**by Dr. Jean K. Lightner**

Most birds have scales on their legs and feet, but a few have feathers. In domestic birds, certain breeds of pigeons and chickens have this interesting trait known as ptilopody. How did this feathering of hind limbs arise? That is what some researchers want to find out (e.g., Bortoluzzi et al., 2020; Li et al., 2020).

## Mutations

A mutation is a change in the sequence of DNA compared to an organism's ancestors'. Some people claim mutations are accidental. They can be, but there is evidence that DNA is designed so potentially adaptive mutations are more common in certain strategic areas. In this column, I have previously discussed an example of this in stickleback fish (Lightner, 2019).

When it comes to feathered feet in domestic birds, breeding experiments have suggested at least three different genes (regions of DNA) are involved. Two of these have now been identified. In chickens, one is found on chromosome 15, near a gene (TBX5) normally expressed in the forelimb. In other words, for the wings to develop correctly, TBX5* needs to be expressed there.

In most feathered breeds of chickens, there is one base pair (DNA letter) difference in the upstream region that controls this gene's expression. It appears this causes the abnormal TBX5 expression in the hind limb, which causes feathers to form there. This mutation is dominant, which means that feathering will occur even if only one of the two copies carries this mutation.

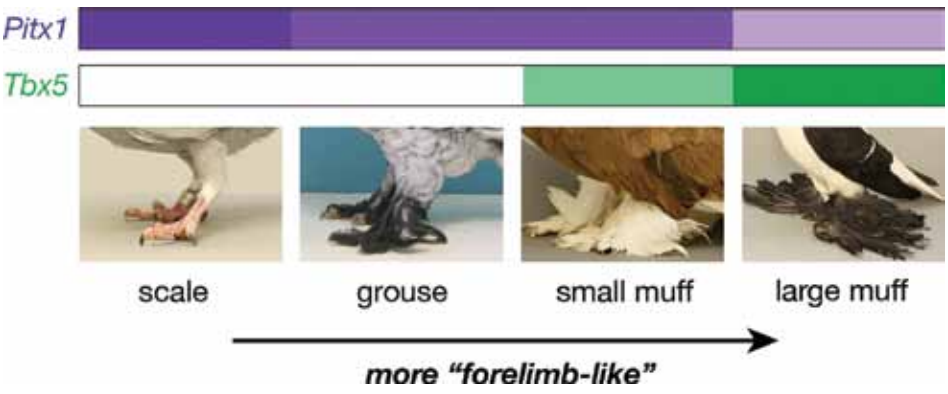


**Figure 1.** Taken from Domyan et al., 2016 (figure 6); foot feathering in several breeds of pigeon; darker colors indicate higher expression levels. Normally, PITX is expressed in the hindlimb but TBX5 is not. When PITX expression declines and/or TBX5 appears, the legs become more like the wings, most notably by the presence of feathers.

A second mutation was identified in some feathered chickens on chromosome 13. It involves a deletion of DNA in the region that controls PITX1*, a gene normally expressed in the hind limb. The result is decreased expression of PITX1 in the legs and feet. This mutation is also dominant and was found in breeds with extensive feathers.

## Parallel Path

The similarity between pigeons and chickens that have this trait is interesting (Domyan at al., 2016; Li et al., 2020). In both cases, the TBX5 and PITX1 genes are affected. When an individual carries mutations affecting both regions, there is more extensive feathering on the legs. Pigeons have a longer deletion upstream from PITX1, but it is in the same region as in the chicken. The altered expression of these two genes tends to make the legs and feet more like the wings (Figure 1).

There are a number of wild birds that also have feathers on the hind limb. For example, the rough-legged hawk, ferruginous hawk and golden eagle are raptors which have legs feathered all the way to the toes. Grouse, which are a type of pheasant, have feathering on the legs to varying extents. In ptarmigans, this feathering extends all the way to the toes and is believed to be adaptive in the very cold regions where they live.

* Both TBX5 (T-box transcription factor 5) and PITX1 (paired like homeodomain 1) are transcription factors. This means that they initiate and regulate transcription of a number of genes necessary for proper development of the forelimb and hindlimb, respectively. The mutations identified are not in these genes, but in regulatory regions that control the expression of these genes.

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## Feathered Feet

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## Designed by an Awesome Creator

Ptilopody, whether providing an adaptive trait or just interesting variety, points to an all-wise Creator (Romans 16:27). The way the TBX5 and PITX1 genes are part of an astoundingly complex network that could only have been designed by someone far wiser than we are provides ample evidence in itself. Further, random change in a complex system would be expected to destroy it. Yet, these mutations do not destroy the organism, but allow for a new trait that in some cases is adaptive. These designed pathways by which animals can adapt are evidence of a Creator who cares for his creatures and intends for the earth to be inhabited (Isaiah 45:18).

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Lightner, J.K. 2019. Matters of Fact: Adaptation in sticklebacks. *Creation Matters* 24(3):7–8.

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# Research Matters

# Summaries of Cutting-edge Research from *Creation Research Society Quarterly*

### Summaries compiled by Jean K. Lightner, DVM, MS

*CRS exists to support and publish research related to understanding our world within the context of a biblical worldview.*

## Supernova-Driven Accelerated Decay

Over a decade ago, research by the RATE (Radioisotopes and the Age of the Earth) team uncovered multiple lines of evidence strongly suggesting that radioactive decay was accelerated in the past. This undermines one of the foundational assumptions of radiometric dating, and the claim that the earth is billions of years old. However, currently, it is unknown what caused this accelerated decay.

One of the RATE team members, physicist Dr. Eugene Chaffin, has been exploring supernovas as a potential explanation for this phenomenon. Supernova explosions emit neutrinos and antineutrinos, which might be related to changes in a hypothetical acceleron field. In the Fall 2020 issue of the *Creation Research Society Quarterly* (*CRSQ*), Dr. Chaffin considers observational data, including our current understanding of neutrinos, and concludes that this is still a viable hypothesis given our current knowledge in physics and astronomy. He discusses the detection of uranium in some stars, since it may be related to whether or not accelerated decay occurred at their locations.

Then, in the Winter 2021 issue, Dr. Chaffin further explores this topic by examining some isotopes (Ni-56 and Co-56) thought to be produced in stars that go supernova and contributing to the light output in the early stages of the process, i.e., the first few hundred days. He concludes that for Co-56 protons, a slight change in the acceleron field is likely to affect half-life, a subject that should be investigated in future studies.

Chaffin, E. 2020. Supernova driven accelerated decay confronts the evidence. *CRSQ* 57:98–112.

Chaffin, E. 2021. Supernova light curves and accelerated decay. *CRSQ* 57:185–199.

## Origin of Life Problems Persist

Those who have followed origin-of-life discussions are probably familiar with the chirality (handedness) problem. Most amino acids are asymmetrical and can occur in two different configurations (isomers) that are a mirror image of each other. So, we speak of left- and right-handed amino acids. When amino acids are formed in a reaction, both forms appear in relatively even amounts. A notable exception is in living organisms where proteins are composed of only left-handed amino acids. In this case, living things begin with one isomer, and it remains the same when a new amino

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## Summaries

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acid is synthesized. This has been a conundrum for evolutionists to explain, with their naturalistic stories that have life coming from non-living chemicals.

Recently, some have referenced the work of two mathematicians that appeared to offer a solution to this problem. They claimed that by breaking symmetry, one should be able to naturally produce homochirality (only one of the two possible isomers). In the Fall 2020 issue of the *CRSQ*, organic chemist Dr. Charles McCombs explains their arguments and shows why they do not correspond to the real world of chemistry. Life uses left-handed amino acids because it was created that way; it could not have arisen naturalistically.

McCombs, C.A. 2020. A correct understanding of symmetry-breaking in chiral organic synthesis. *CRSQ* 57:113–122.

## The Human Genome and the Bible

The Fall 2020 issue of the *CRSQ* also contains two articles examining human genetic information, comparing its pattern to what we would expect from the history presented in the Bible. In the first paper, Dr. Marshall Jordan looks at variants (different sequences in the same region of DNA). Evolutionists believe variants can only arise by mutation. However, the pattern suggests that for most chromosomes, God placed considerable variation in Adam and Eve when they were created. In contrast, the Y chromosome shows a different pattern. Y chromosomes appear only in males, and there are far fewer variants. This suggests that the Y chromosome variants in men today have arisen by mutation, consistent with a single male ancestor (Adam) that lacked variation in his unique chromosome.

In the second paper, Dr. Jordan uses a computer model to consider how common variants in the human Y chromosome became common. Events after the Flood, such as the Babel dispersion and the Ice Age, would have resulted in population collapses. Opportunistic male reproduction (e.g., King Solomon, with numerous wives, and Genghis Khan), and the slaughtering of young men in battle would have played a role too. He also considered an increased number of mutations being passed on by older patriarchs. When these various details were incorporated into the model, the variant pattern closely resembled that of the 1000 Genomes database. Thus, genetic data fits very well with the history we know from the Bible.

Jordan, M. 2020. The distribution of genetic variants in the human genome reflects created diversity. *CRSQ* 57:123–132.

Jordan, M. 2020. A computer model of mutation accumulation on Y chromosomes suggests events recorded in Genesis produced common variants. *CRSQ* 57:133–145.

*The LORD's works are great,*
*studied by all who delight in them.*
*All that He does is splendid and majestic;*
*His righteousness endures forever.*
*Psalm 111:2-3 CSB*

*Continued creation research is made possible by the generous gifts (time, money and prayer) of our many supporters. Thanks to all who have contributed!* CM

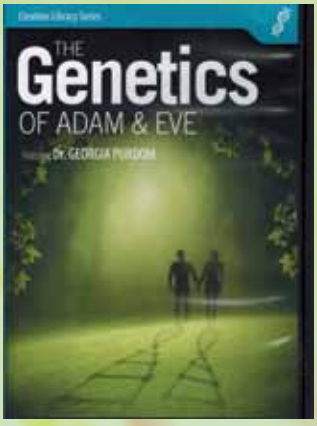
*Available in the CRS Bookstore*

**The Genetics of Adam and Eve**

**Georgia Purdom. 2014.**

**Answers in Genesis**

**DVD, 62 minutes**




Many evangelicals are claiming that Adam and Eve never existed, and that the study of genetics has disproven the existence of an original created couple. Consequently, many have begun to redefine sin and salvation, undermining the gospel. In her eloquent style, Dr. Purdom shows that Adam and Eve were real people from scripture and genetics. She also exposes the myth of 1 to 2% difference in the genetics of man and chimps by showing the difference is actually closer to 30%

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## Prayer Matters

**Praise:** We thank God for all your prayers and support!

**Prayer:** Please pray for creation researchers who have attended the CRS conference, as well as other conferences. Between the actual presentations, important collaboration often takes place. We need God's guidance and direction as we seek to honor God with high quality research. Also, please continue to pray that God will raise up many younger researchers to carry creation research forward!

*Thanks Again!*

## CRS has moved!

The Creation Research Society has moved our operation center and research laboratories to the campus of Arizona Christian University, Glendale, AZ. The new facility provides the Society with:

- High-profile location and increased visibility for the Society
- Modern research laboratory
- Easily accessible walk-in bookstore
- Modern office space
- Increased laboratory space

For more information or to help support the Society:
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